U.S. DEPARTMENT OF COMMERCE
National Technical Information Service

PB-260 044

DIVISION OF WATER POLLUTION CONTROL

THE PROBLEM OF WATER POLLUTION; THE OBJECTIVES OF THE DIVISION; THE PROGRAM OF THE DIVISION

PUBLIC HEALTH SERVICE, WASHINGTON, D.C.

SEPTEMBER 1949

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PB 260 044

FEDERAL SECURITY AGENCY

Public Health Service

DIVISION OF WATER POLLUTION CONTROL

The Problem of Water Pollution

The Objectives of the Division

The Program of the Division

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September 1949

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BIBLIOGRAPHIC DATA SHEET	1. Report No.	2.	3. Recipient's Accession No. PB-260 044
4. Title and Subtitle Division of Water Pollution Control: The Problem of Water Pollution; The Objectives of the Division; The Program of the Division.			5. Report Date Sep 49 6.
7. Author(s)			8. Performing Organization Rept. No.
9. Performing Organization Name and Address Public Health Service, Washington, D. C.			10. Project/Task/Work Unit No. 11. Contract/Grant No.
12. Sponsoring Organization Name and Address			13. Type of Report & Period Covered 14.

15. Supplementary Notes

16. Abstracts

Problems, objectives, and programs related to water pollution control are identified in this report that notes that not one of the 350 watersheds in the U.S. is free of pollution. Specific instances of water pollution are cited which deal with public health, recreation, fish and aquatic life, industrial water supply, public water supply, sewage, and industrial wastes. Charts, tables, and diagrams are provided to illustrate each case.

17. Key Words and Document Analysis. 17a. Descriptors

17b. Identifiers/Open-Ended Terms

*Watersheds
*Water pollution control
Water quality
United States
*Public health
Fishes
Recreation
Water supply
Industrial wastes
Sewage
Tables(Data)
Reclamation

17c. COSATI Field/Group 13B

18. Availability Statement	19. Security Class (This Report) UNCLASSIFIED	21. No. of Pages 34
	20. Security Class (This Page UNCLASSIFIED	22. Price

The Problem

WATER POLLUTION CONTROL

Problem

Not one of the 350 water-sheds in the Nation is free of pollution. The condition has become progressively worse. The need to reclaim and protect our streams was recognized by Congress by the enactment of P. L. 845 on June 30, 1948, the Water Pollution Control Act.

Waters are polluted by the wastes from concentrations of population and from industry.

Since 1850 the number of incorporated places has increased 15 fold. Each of the more than 25,000 communities in the Nation is an actual or potential source of pollution. Over 75 million persons dump their wastes through sewers into the Nation's waters; only a small portion of this waste is sufficiently treated.

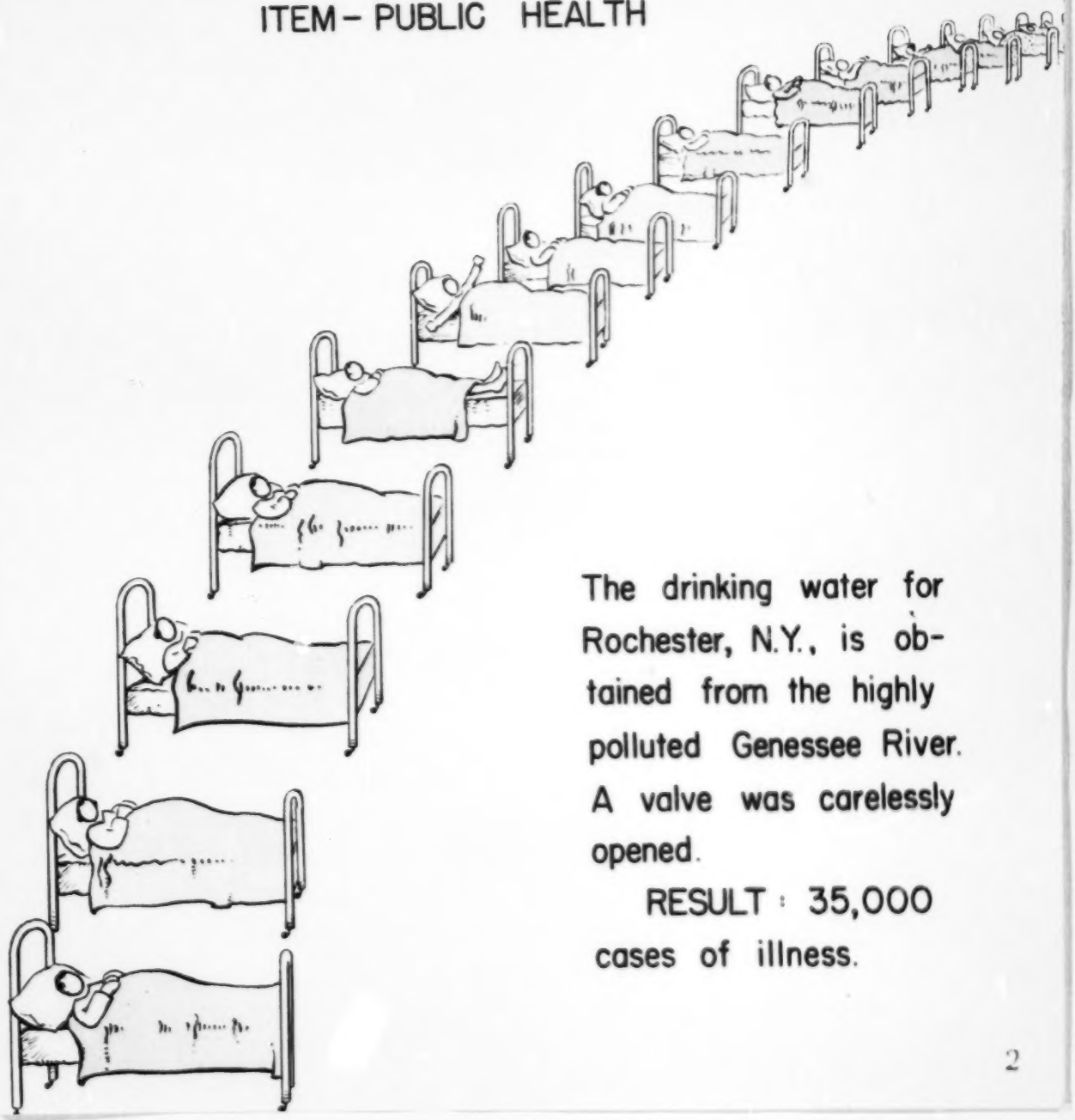
The growth of industry can be measured by machine power, which has increased over 250 times between 1850 and 1940. Our annual energy supply has increased 2300% from 1871 to 1944. The dollar value added by manufacture has increased from $4\frac{1}{2}$ billion in 1899 to over 74 billion in 1947.

The complexity of industry has increased in proportion to its growth. The population equivalent of industrial wastes discharged is estimated to be greater than that of domestic sewage reaching our streams.

Although a considerable body of knowledge exists applicable to the control of water pollution, there is much need for additional fundamental and developmental research.

POLLUTION DAMAGES IMPORTANT WATER USES

ITEM – PUBLIC HEALTH

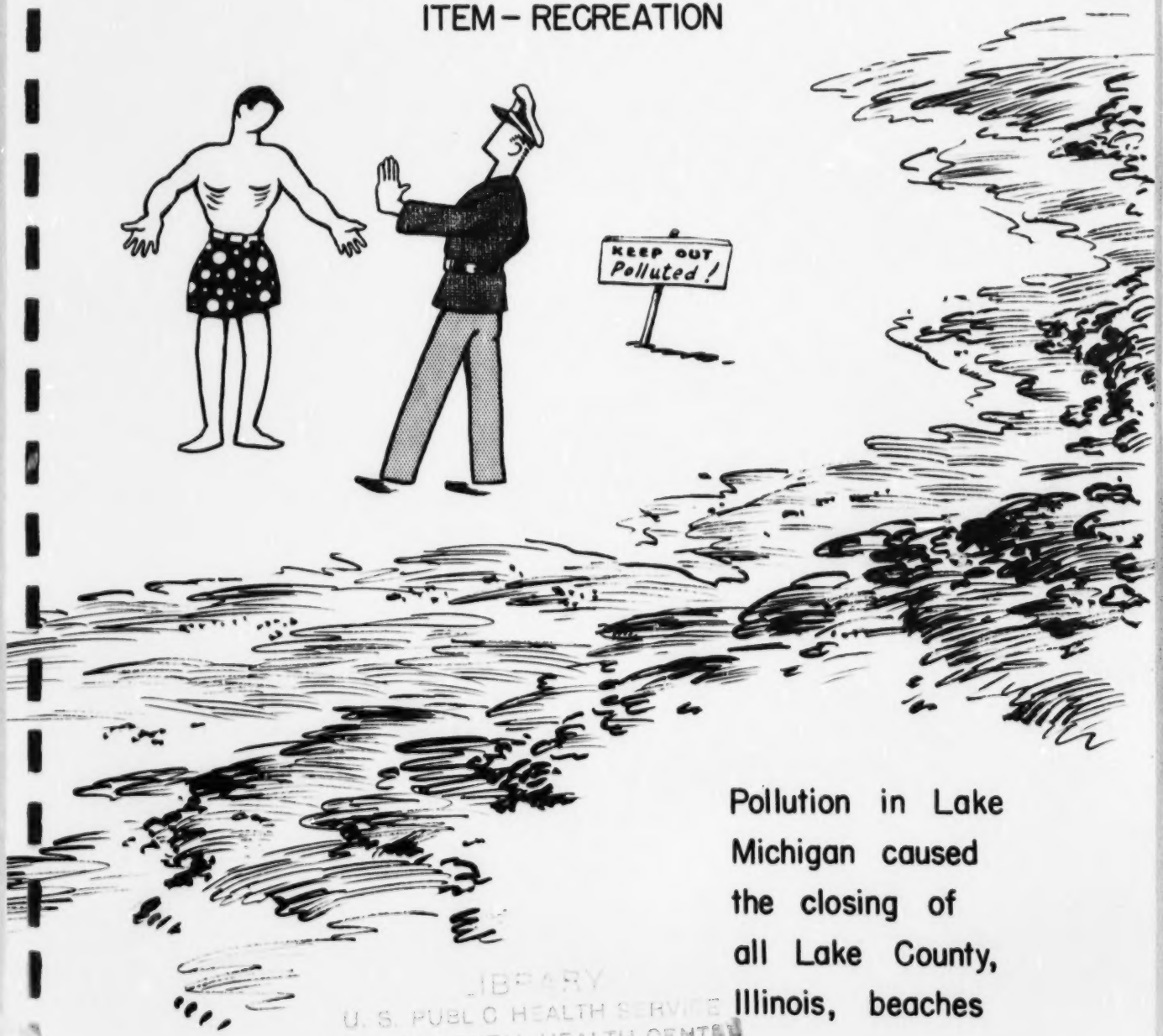


The drinking water for Rochester, N.Y., is obtained from the highly polluted Genessee River. A valve was carelessly opened.

RESULT : 35,000 cases of illness.

POLLUTION DAMAGES IMPORTANT WATER USES

ITEM – RECREATION



Pollution in Lake Michigan caused the closing of all Lake County, Illinois, beaches

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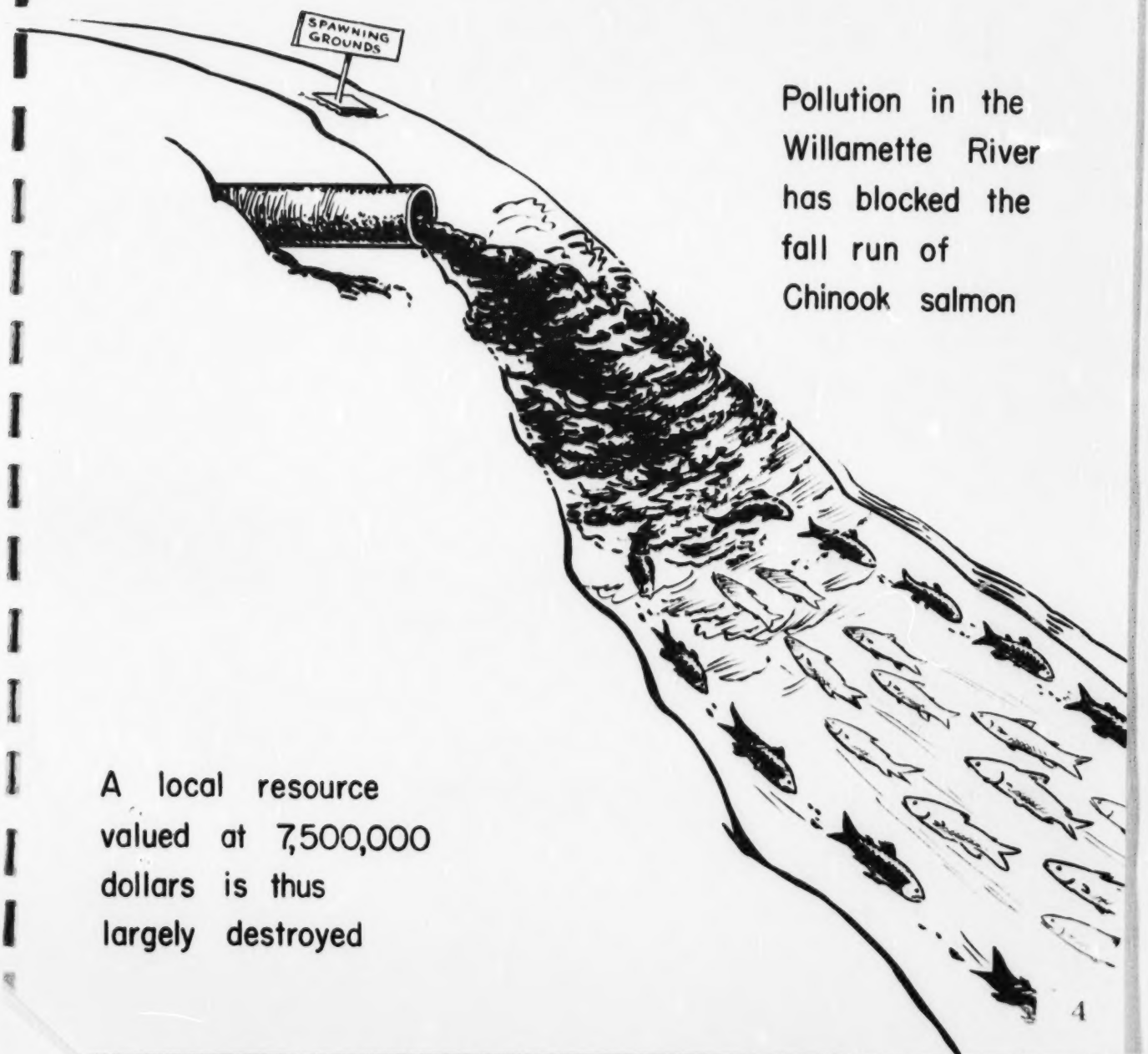
POLLUTION DAMAGES IMPORTANT WATER USES

ITEM – FISH AND AQUATIC LIFE

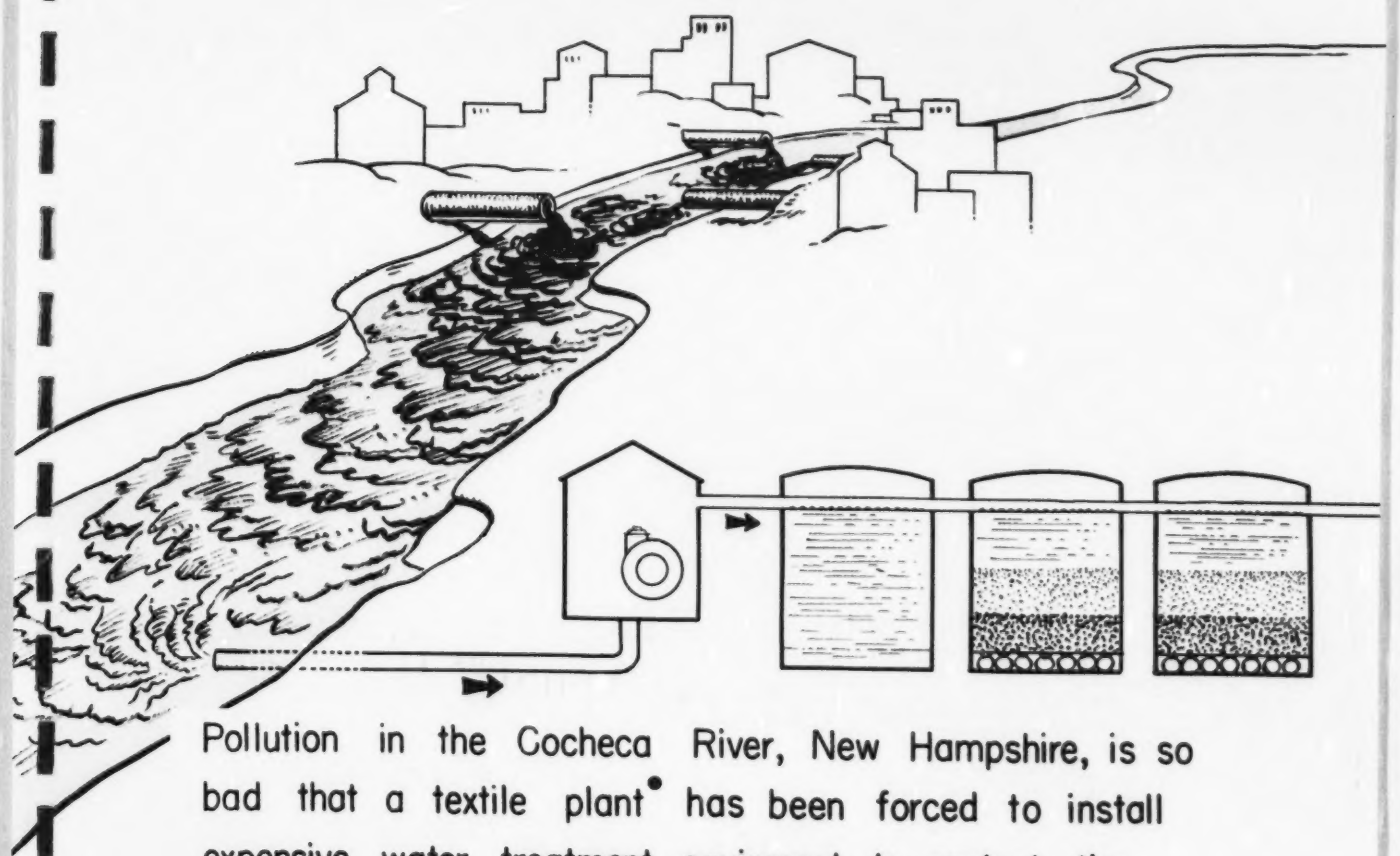


Pollution in the Willamette River has blocked the fall run of Chinook salmon

A local resource valued at 7,500,000 dollars is thus largely destroyed

POLLUTION DAMAGES IMPORTANT WATER USES

ITEM - INDUSTRIAL WATER SUPPLY



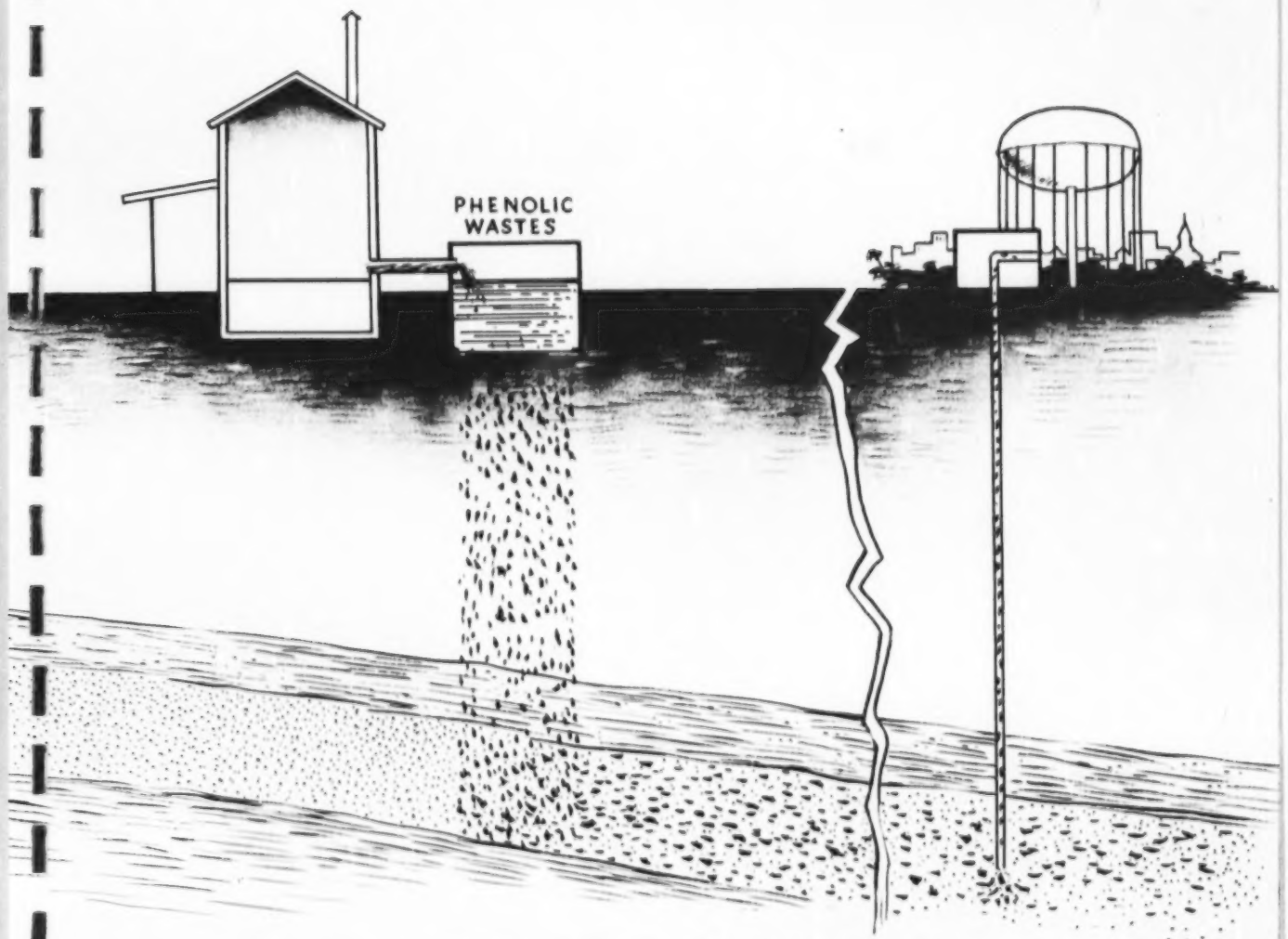
Pollution in the Cocheco River, New Hampshire, is so bad that a textile plant• has been forced to install expensive water treatment equipment to protect the quality of the product

•Identity and exact location withheld at request of state

U.S. INDUSTRY USES <u>10 BILLION</u> GALLONS OF WATER EACH DAY

POLLUTION DAMAGES IMPORTANT WATER USES

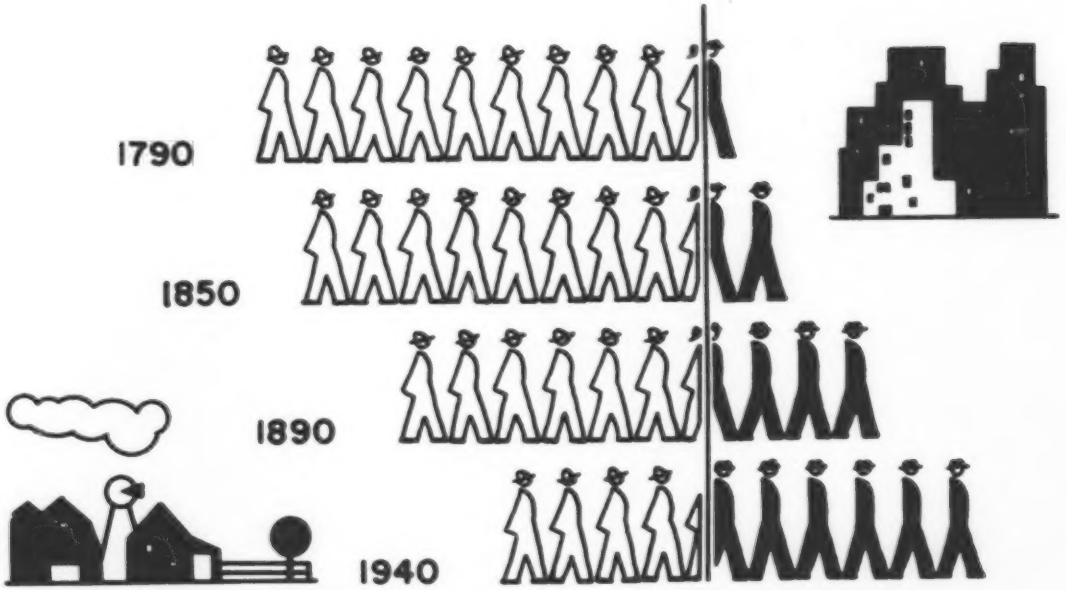
ITEM - PUBLIC WATER SUPPLY



Waste from a pine tar plant near Fort Myers, Florida, reached the underground water stratum and impaired the city's water supply. The company paid 50,000 dollars in damages.

MORE AND MORE SEWAGE IS REACHING OUR STREAMS

REASON – AMERICA BECOMES A COUNTRY OF CITY DWELLERS



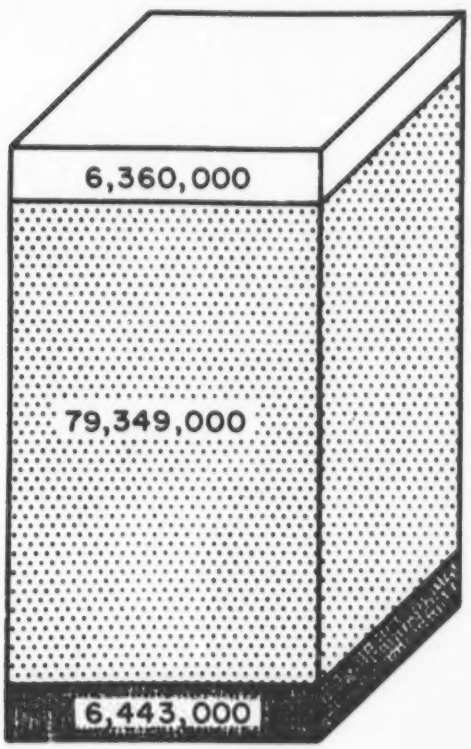
Each symbol represents 10 per cent of the total population

We started as a nation of farm and rural dwellers, but a great drift to the cities began as we built up our industrial civilization in the last century. By the time World War II started, nearly three fifths of our people were living in towns and cities.

The Problem

MORE AND MORE SEWAGE IS REACHING OUR STREAMS

The Construction of Sewage Treatment Works Has Not Kept Pace With the Increased Sewage Discharges.



People in communities needing new systems.

People in communities needing improved systems.

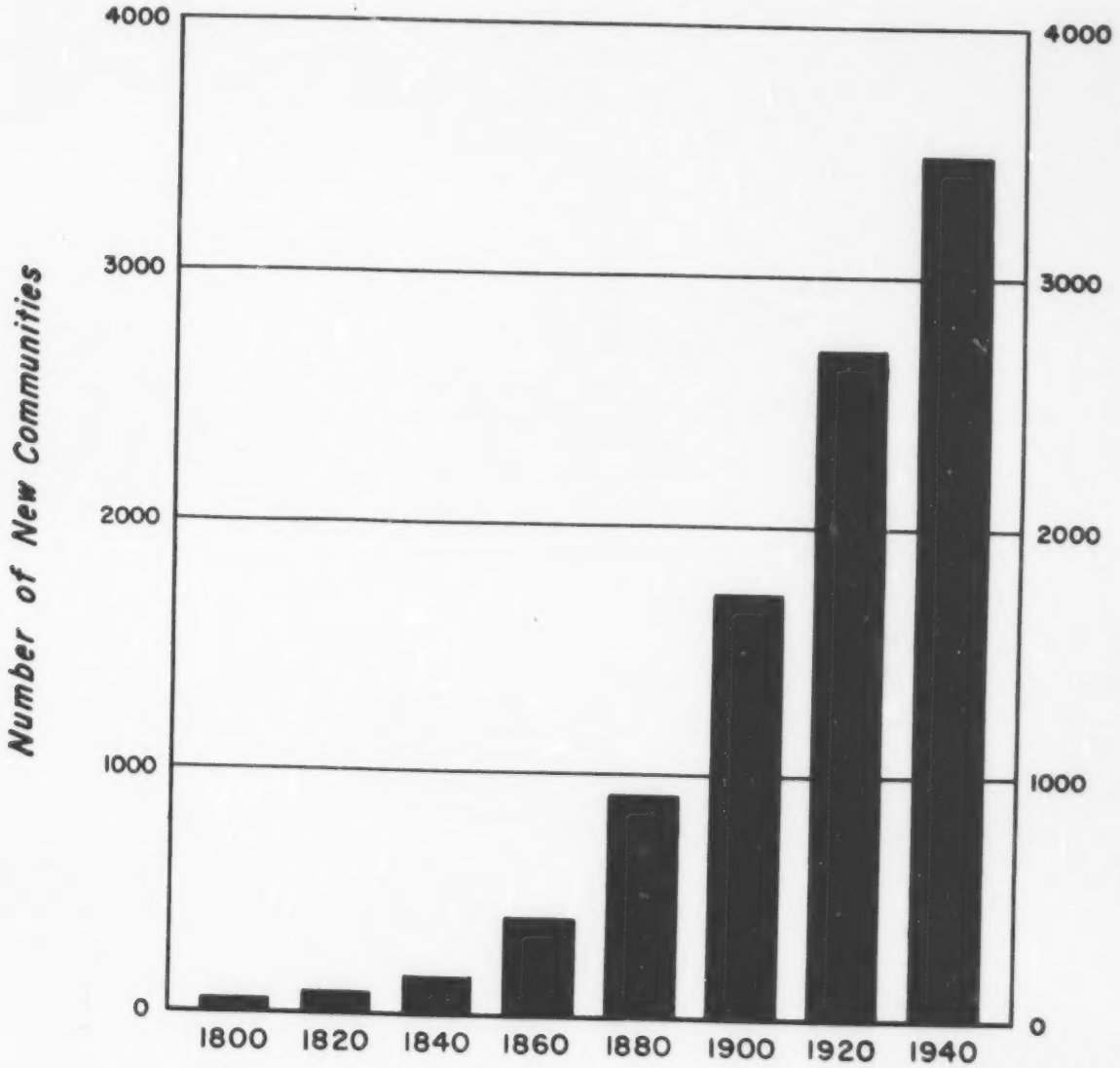
People reporting no needs.

Source: Supplement 204 Public Health Reports.

The Problem

SEWAGE IS SPOILING NEW WATER AREAS

Reason: EACH NEW COMMUNITY – A NEW SOURCE OF POLLUTION

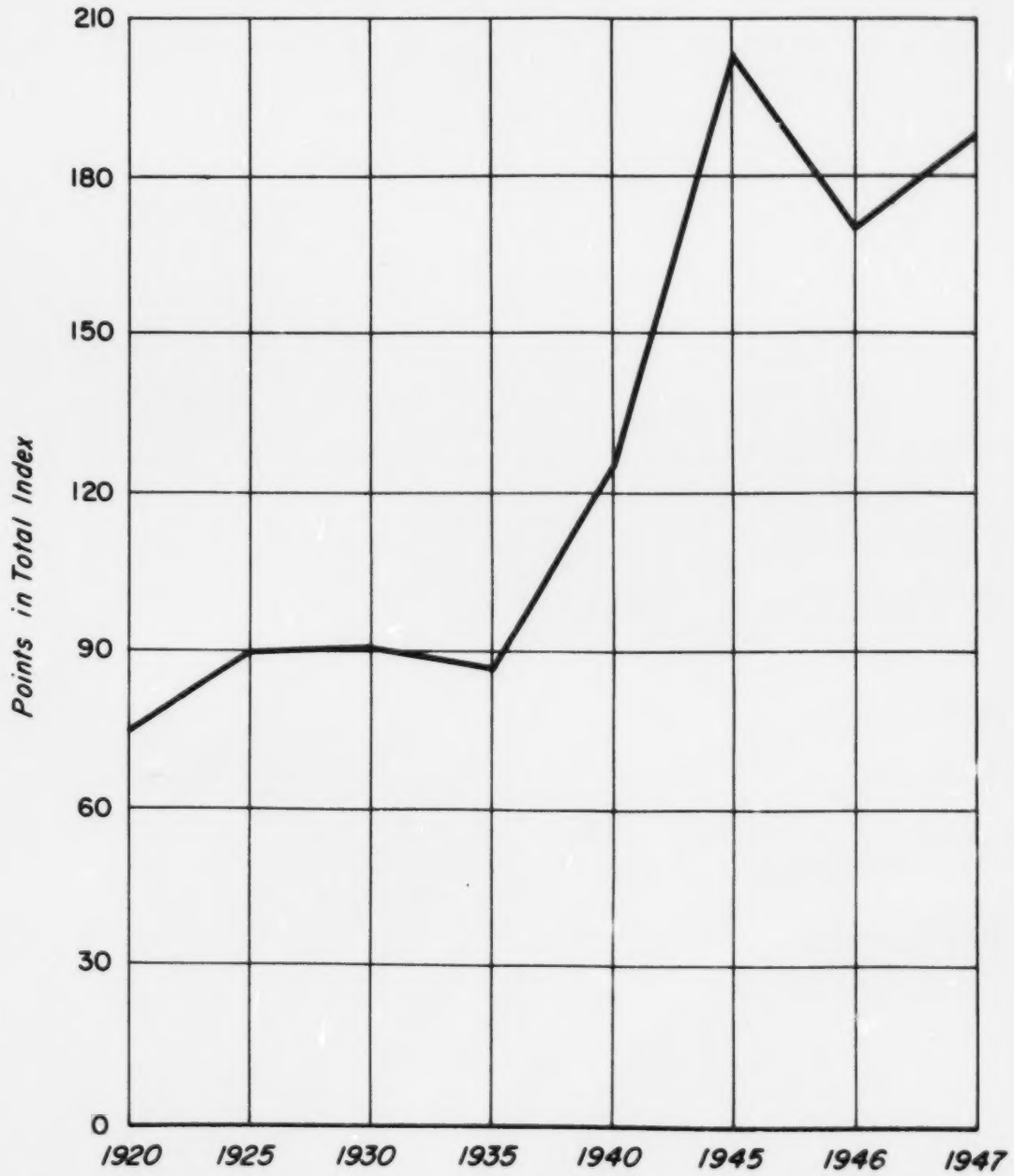


Number of Cities With Population of 2500 or More —

UNITED STATES
1800-1940

INDUSTRIAL WASTES POLLUTE OUR STREAMS

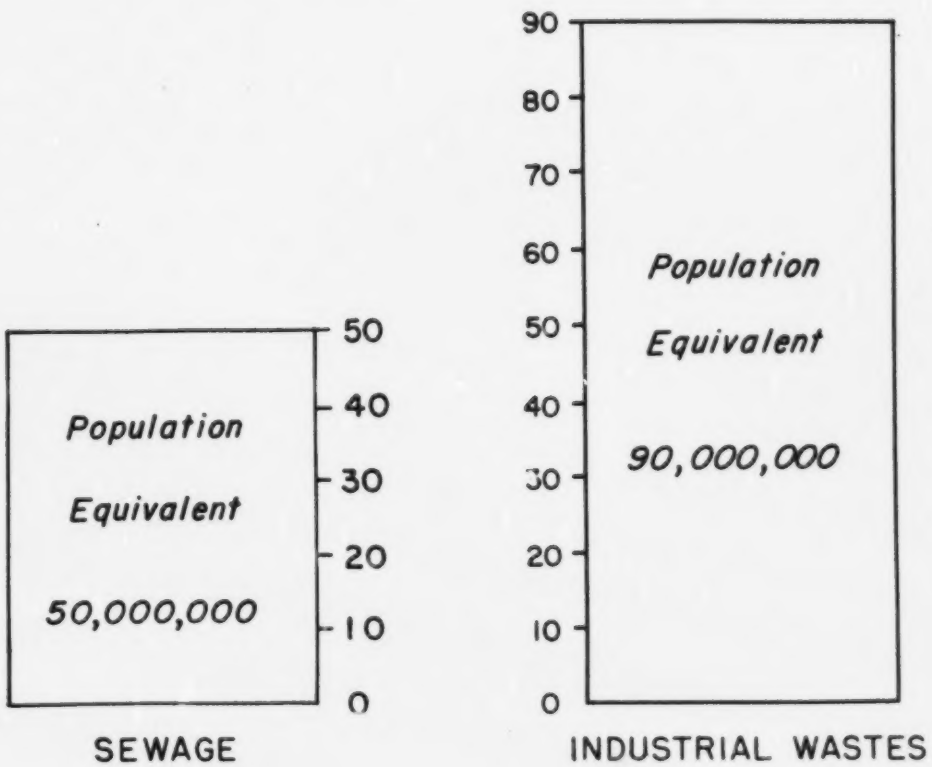
Industrial Production Has Increased About 250% Since 1920.



Source: "The Economic Almanac For 1949." National Industrial Conference Board.

INDUSTRIAL WASTES POLLUTE OUR STREAMS

The Total Pollution From Industrial Sources Is Even Greater Than From Sewage



Source: Supplement 204 Public Health Reports Adjusted by Industrial Production Index.

INDUSTRIAL WASTE — A NATIONAL PROBLEM

INDUSTRIES CONTRIBUTING WASTES IN THE MAJOR DRAINAGE BASINS

WATER POLLUTION CONTROL

Objectives

In order to realize the overall benefits resulting to the national health and welfare by the prevention and abatement of stream pollution, the primary objectives of the Public Health Service in its Water Pollution Control activities are:

1. To develop comprehensive programs for the approximately 350 watersheds comprising the Continental United States and its Territories for eliminating or reducing pollution of interstate waters.

2. To stimulate planning and construction of waste treatment works in accordance with the comprehensive programs.

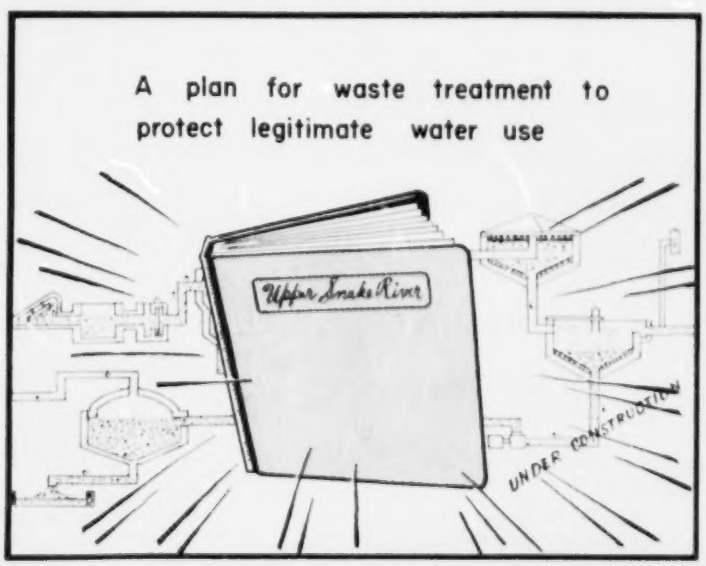
3. To provide technical assistance to State and interstate agencies, to municipalities, and to industries in the formulation and execution of their stream pollution abatement programs.

4. To conduct and stimulate research on: industrial waste treatment methods, standards of water quality for various uses, cheaper and more effective methods of sewage treatment, and reclamation of reusable resources.

5. To place into effect, as required, the enforcement provisions of Public Law 845 for the abatement of pollution of interstate waters.

THE COMPREHENSIVE PROGRAM

A BLUEPRINT FOR PROGRESS



The Objectives

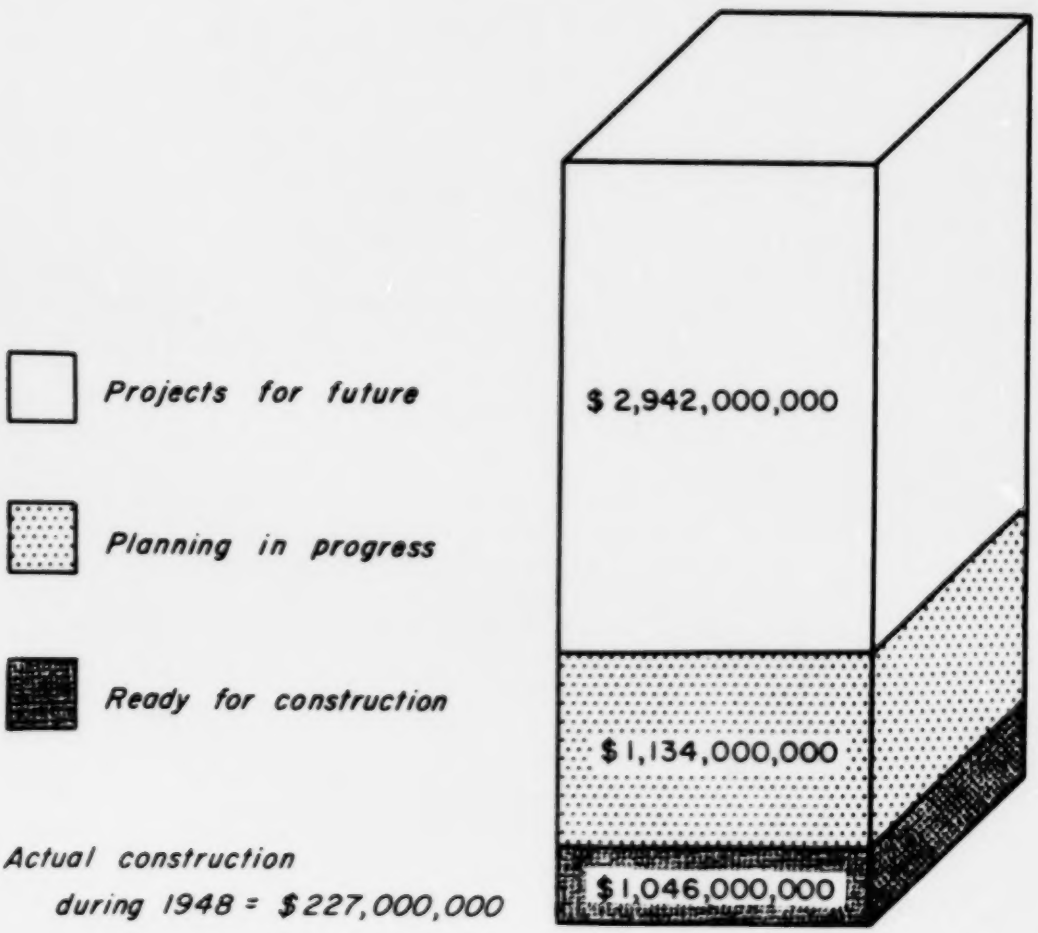
CONSTRUCTION OF WASTE TREATMENT WORKS

Municipal Sewerage and Sewage Plant Needs

(Based on Estimated Costs)

$ 5 Billion of Sewerage and Sewage Treatment Plants Needed

$ 1 Billion ready for construction — plans are complete



Actual construction during 1948 = $ 227,000,000

Source: Records submitted by Federal Works Agency and from Engineering-News Record.

WATER POLLUTION CONTROL

Program

Extensions proposed for the Division of Water Pollution Control include: activation of the 4 major basin areas in addition to the 10 now existing to complete the structure of the 14 originally planned; further decentralization to the field staff of major responsibility, under broad policy guidance, for technical and financial aid to States, interstate agencies, municipalities, and industries; development of the technical arm of the Program--the Environmental Health Center, at Cincinnati--by providing additional personnel and facilities to permit the highly competent specialized assistance to the field offices, to the States, and to industries.

The Program will consist of:

1. Developing and utilizing comprehensive programs. (SEE NEXT PAGE)

2. Stimulating and supporting the planning and construction of waste treatment works -- By:
   a. Administering financial programs which may be adopted by Congress.
   b. Public education of benefits resulting to domestic and industrial water supplies, fish and aquatic life, recreational facilities, agriculture, and property values through construction of waste treatment works.

3. Technical and financial aid to public agencies -- By:
   a. Grants for industrial waste research and studies.
   b. Providing competent technical consultation on special problems.
   c. Participation in joint investigations on interstate waters.

4. Research -- To:
   a. Aid in developing more effective sewage treatment and industrial waste treatment methods.
   b. Develop standards of water quality for various uses.
   c. Develop methods for reclaiming reusable resources.

5. Enforcing Public Law 845 -- By:
   Conducting investigations, holding hearings, and instituting legal action to enforce abatement of pollution of interstate waters.

COMPREHENSIVE PROGRAMS UNDER PUBLIC LAW 845

The Development of Comprehensive Programs: The basic authority for comprehensive programs is in section 2(a), Public Law 845, and requires consideration of all legitimate water uses. The technical requirements to establish a comprehensive program include: (1) Determining Existing Stream Conditions; (2) Determining Desirable Stream Uses; (3) Fixing Water Quality Requirements; (4) Developing Corrective Measures.

The program comprises two general phases: (1) Developing a baseline comprehensive report using available data to provide: a reference point to measure progress, a guide to needed additional data and for developing more complete programs, a justification for loan approvals, and a public education document. (2) A more complete comprehensive report emphasizing quantitative data.

The baseline report will include: (1) General area conditions; (2) Analysis of Form PHS-1156 data on maps, charts, graphs, etc; (3) Listing and status of projects; (4) Status of availability of data on pollution; (5) Conclusion; (6) Appendix listing general information as State law, water quality standards, etc.

The Public Health Service will, with State cooperation: aid in compiling data; combine State data into watershed reports; develop reports in accordance with above outline; and reproduce reports.

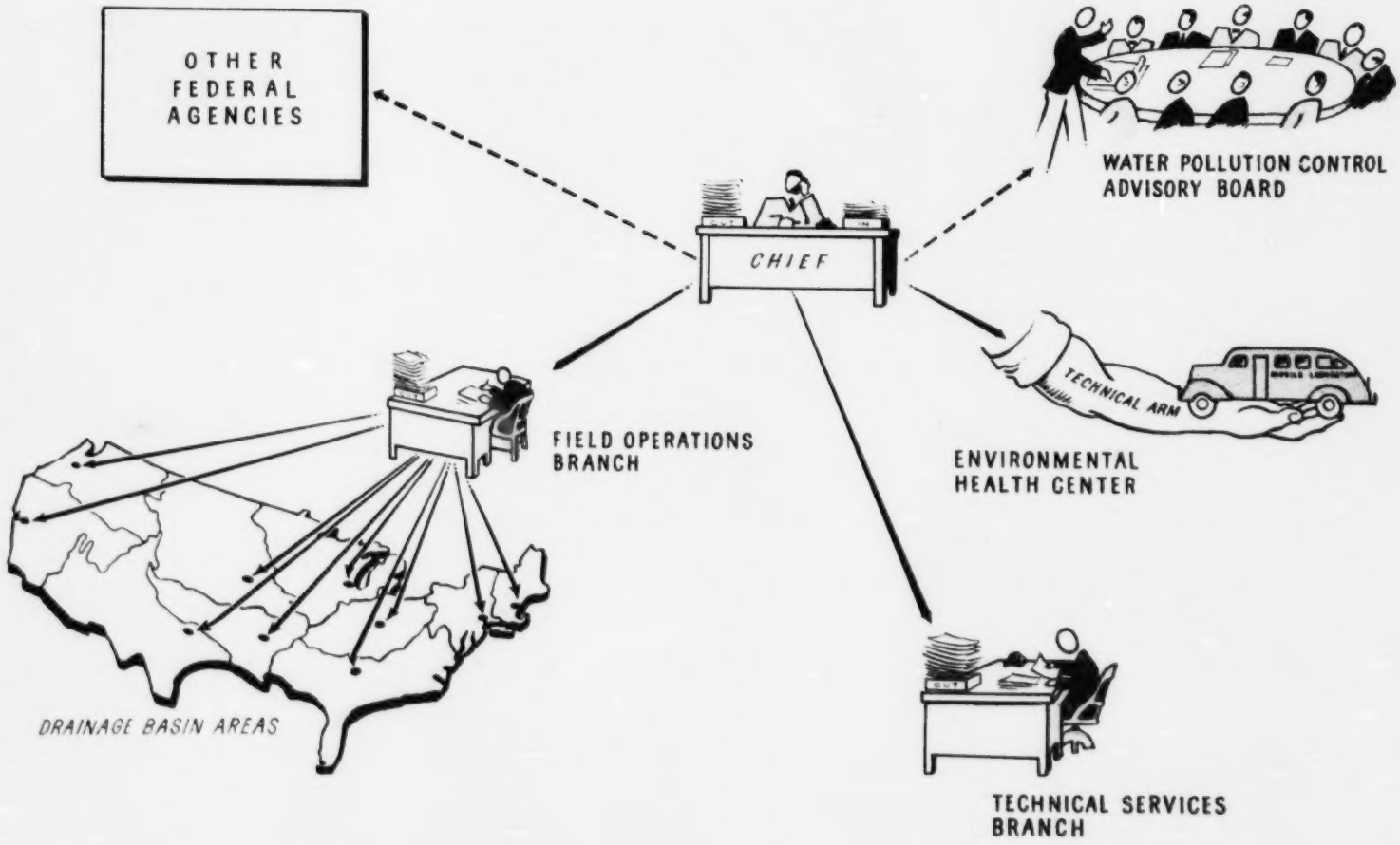
Utilization of Comprehensive Programs: The responsibility of the Surgeon General to prepare or adopt comprehensive programs is mandatory.

The baseline reports will be used by States in carrying out action programs in the interim period prior to developing more complete programs. Action should not be delayed in the construction of remedial works pending the completion of comprehensive programs.

Comprehensive programs will support States' action programs and guide Federal enforcement. They must have objectivity, adequately protect public interests, and act as guides in resolving divergent views regarding water uses, treatment required, etc. In developing comprehensive programs, all views must be considered. Public hearings may be required. Adequate notification of such should be given. Arrangements should be made for filing reports and recording proceedings. No comprehensive program can be termed final; such programs are dynamic due to changes in population, industrial activity, etc.

Organization Of

THE DIVISION OF WATER POLLUTION CONTROL



DEVELOPING THE COMPREHENSIVE PROGRAM

The basic data required — Given on PHS-1156

WATER POLLUTION CONTROL
DATA FOR DEVELOPMENT OF COMPREHENSIVE PROGRAM

STATE (Originating reports)

SOURCE OF POLLUTION	LOCATION	POPULATION SERVED (Estimated)	DIST. TO NEAREST WATER COURSE	TREATMENT	DEGREE OF TREATMENT		DOWNSTREAM WATER USE	WATERCOURSE STATUS	PROJECT
					P	S			
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									

L-C	REMARKS	L-C	REMARKS

DRAINAGE BASIN
SUB-BASIN
DISCHARGE: FROM ... TO ...

SUB-BASIN PAGE NO.

A

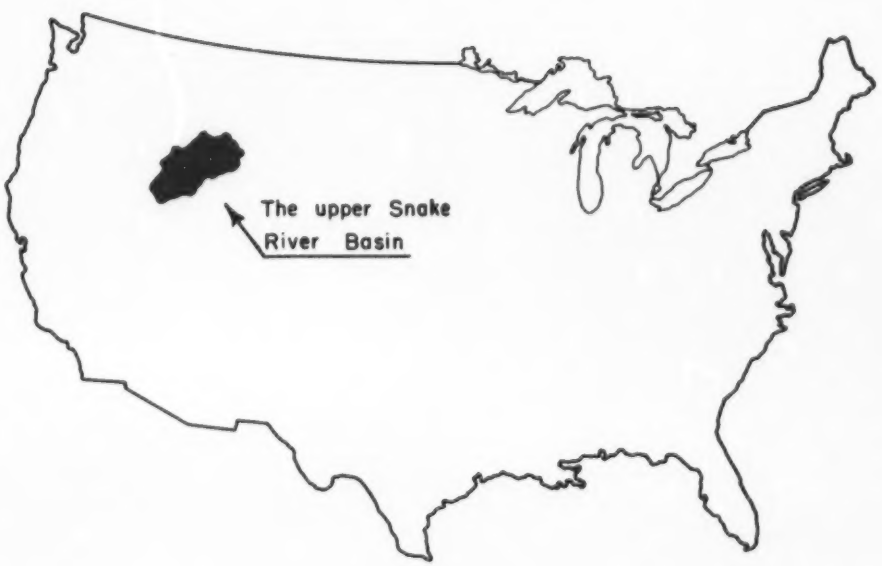
20

The Program

DEVELOPING THE COMPREHENSIVE PROGRAM

AN ACTUAL ILLUSTRATION

ITEM – LOCATION

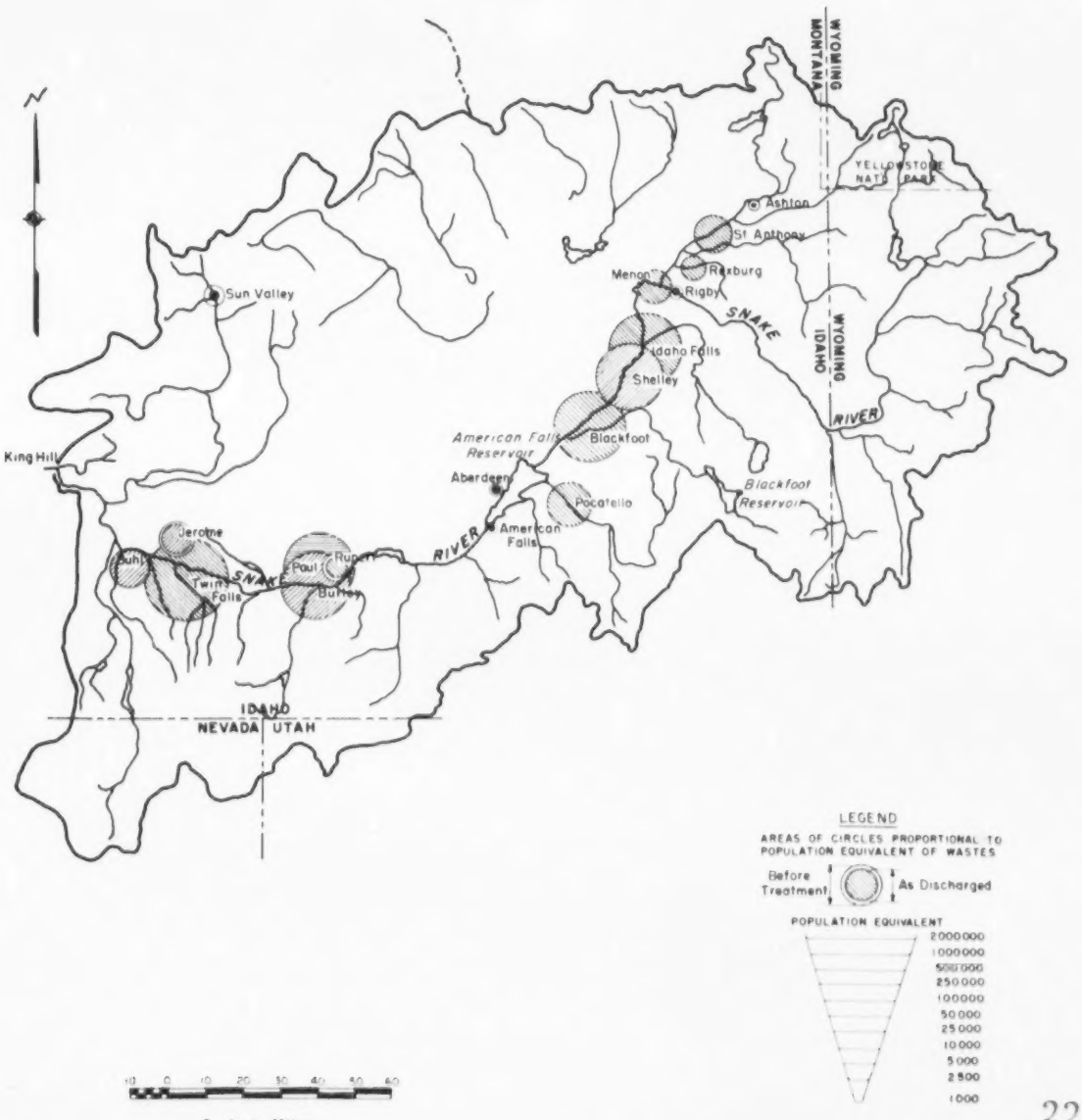


Only ONE of 350 basins in the United States

DEVELOPING THE COMPREHENSIVE PROGRAM

THE UPPER SNAKE RIVER BASIN - AN ACTUAL ILLUSTRATION

ITEM - SOURCES AND EXTENT OF POLLUTION



DEVELOPING THE COMPREHENSIVE PROGRAM

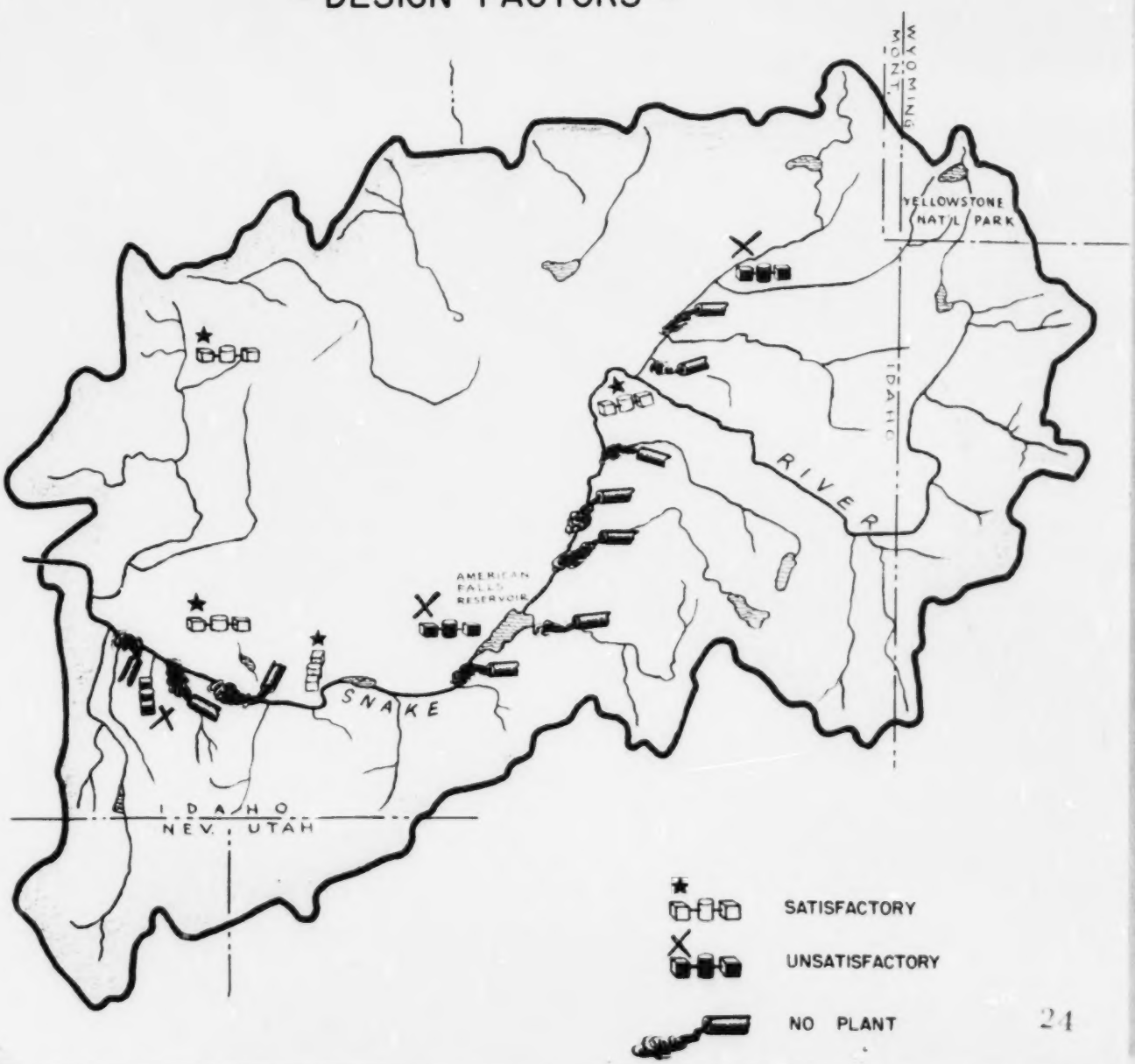
UPPER SNAKE RIVER BASIN - AN ACTUAL ILLUSTRATION

ITEM - ADEQUACY OF TREATMENT
- OPERATION FACTORS -

DEVELOPING THE COMPREHENSIVE PROGRAM

UPPER SNAKE RIVER BASIN - AN ACTUAL ILLUSTRATION

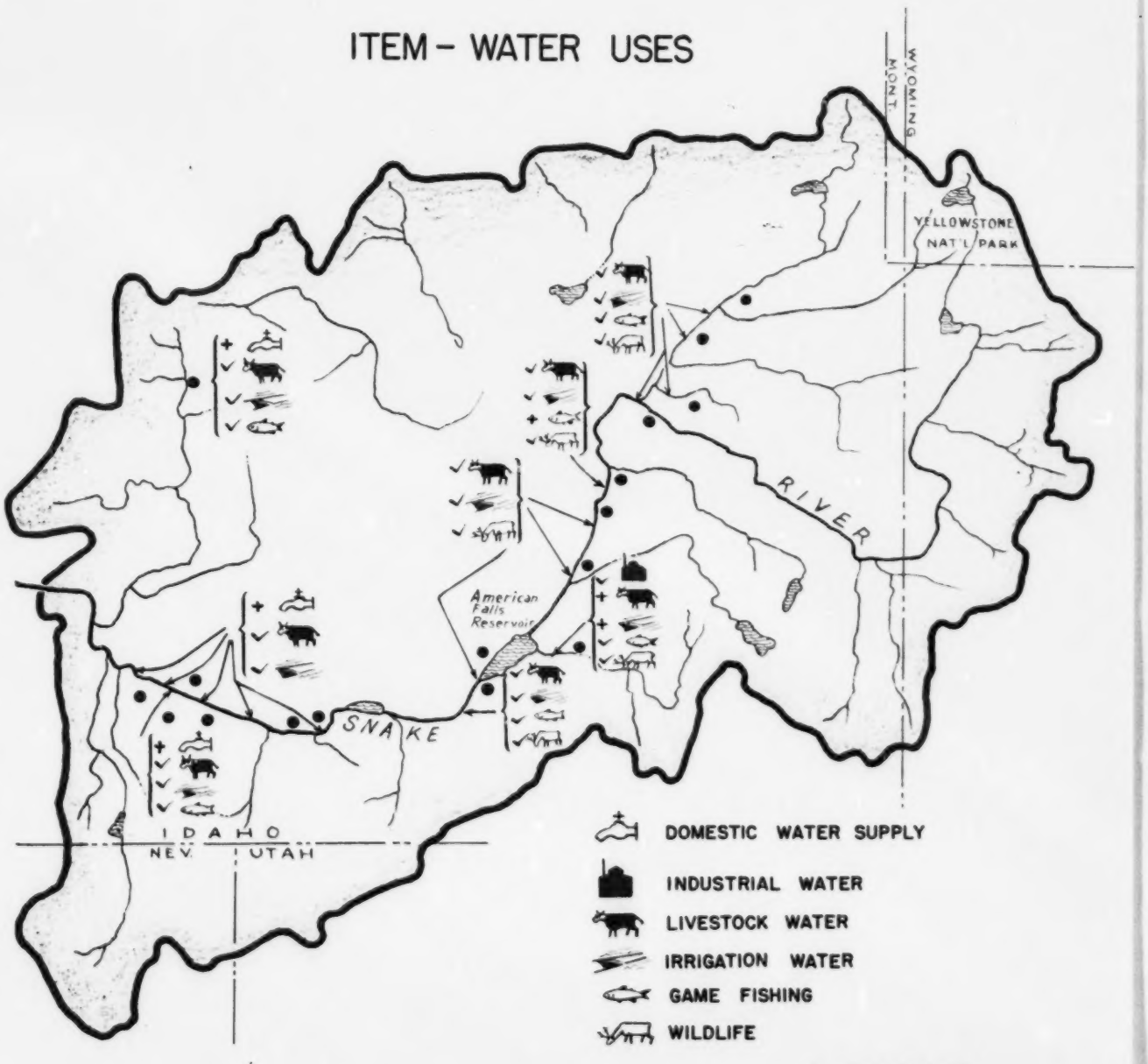
ITEM - ADEQUACY OF TREATMENT
- DESIGN FACTORS -



DEVELOPING THE COMPREHENSIVE PROGRAM

UPPER SNAKE RIVER BASIN - AN ACTUAL ILLUSTRATION

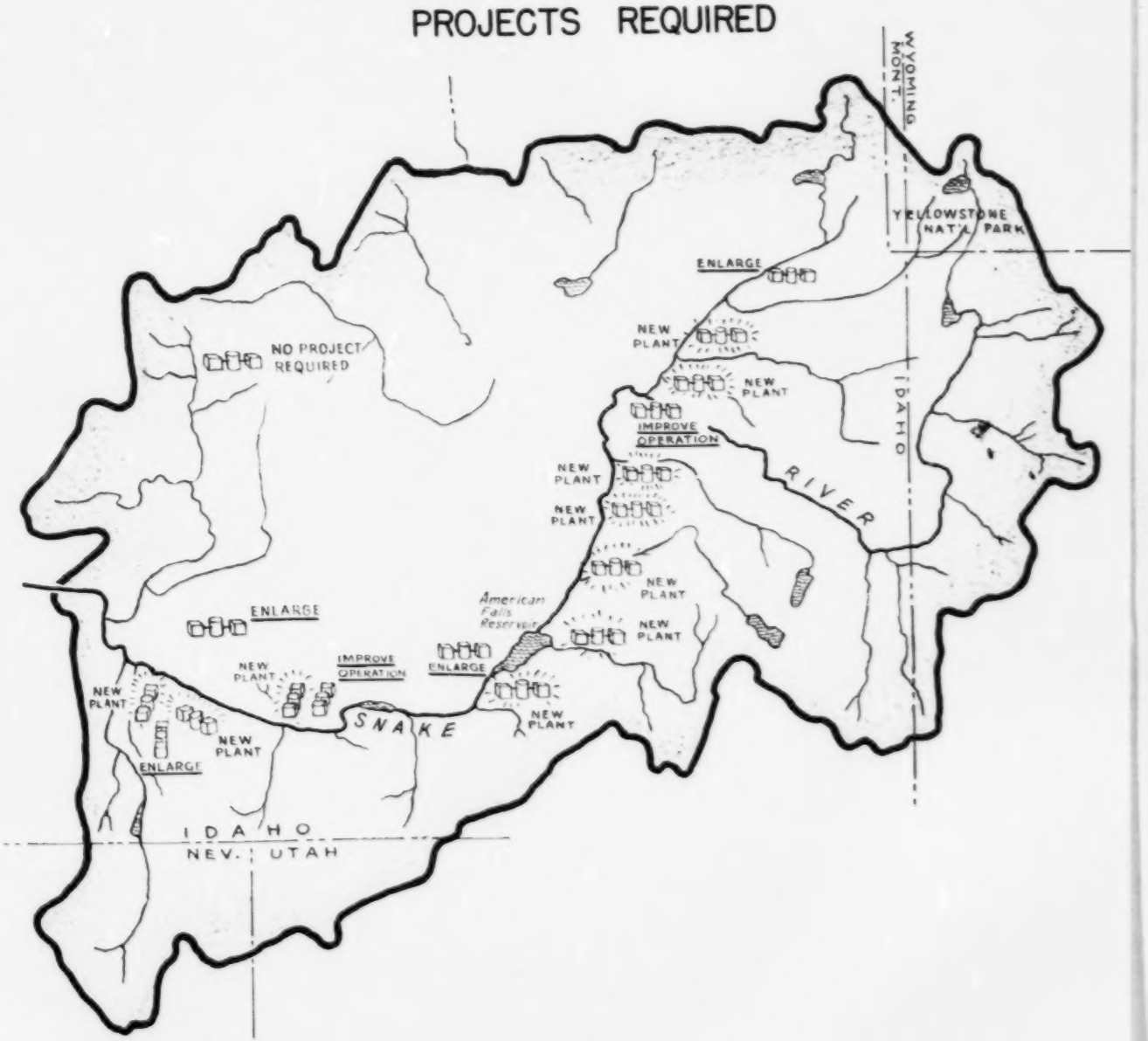
ITEM - WATER USES



DEVELOPING THE COMPREHENSIVE PROGRAM

UPPER SNAKE RIVER BASIN - AN ACTUAL ILLUSTRATION

ITEM - WASTE TREATMENT PROJECTS REQUIRED



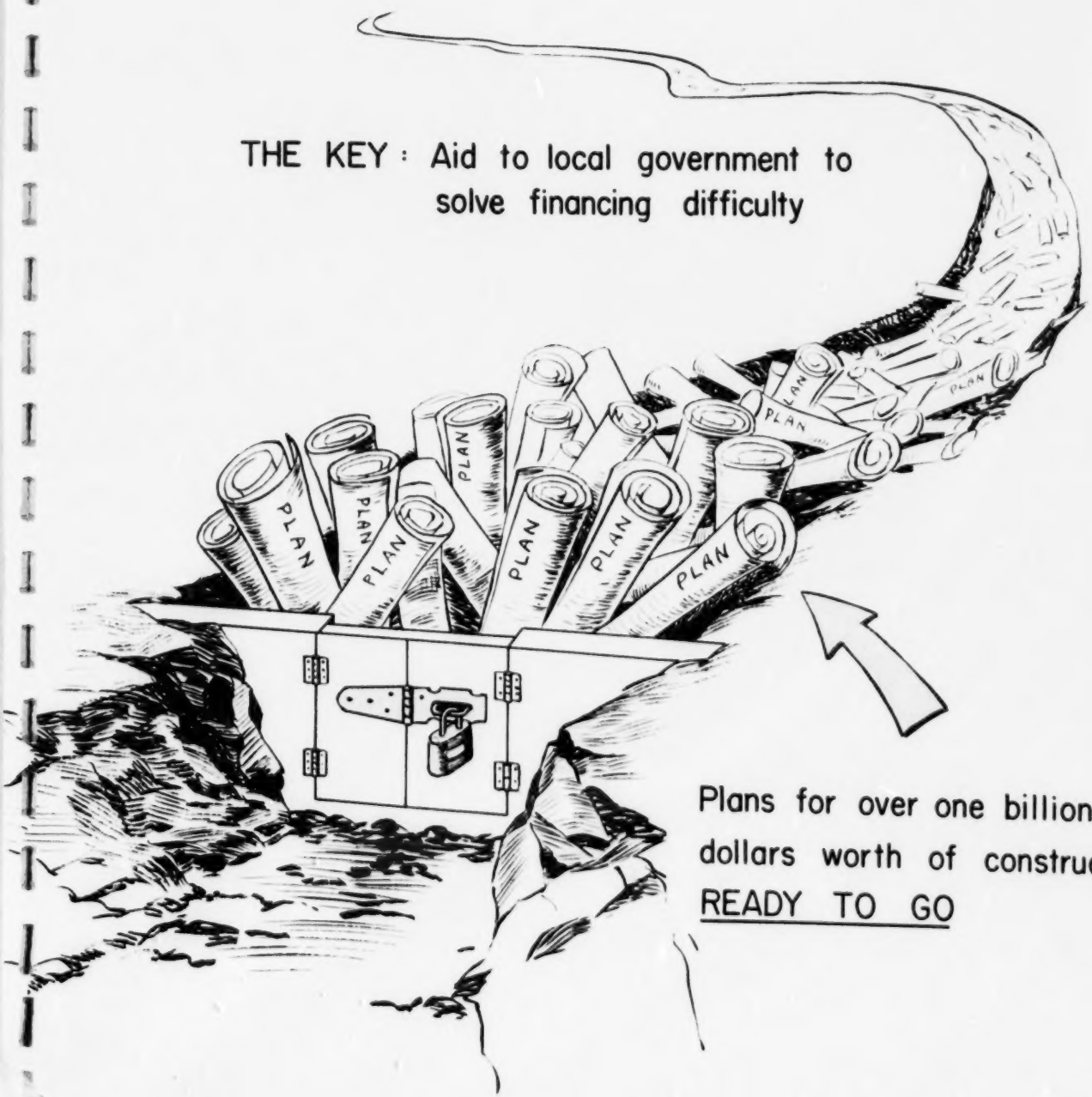
DEVELOPING THE COMPREHENSIVE PROGRAM

The information on the Upper Snake River Basin is not complete. Considerable field work is needed to fill gaps in knowledge.

The Comprehensive National Program will require about 350 times as much work as the basin illustrated.

CONSTRUCTION OF TREATMENT WORKS

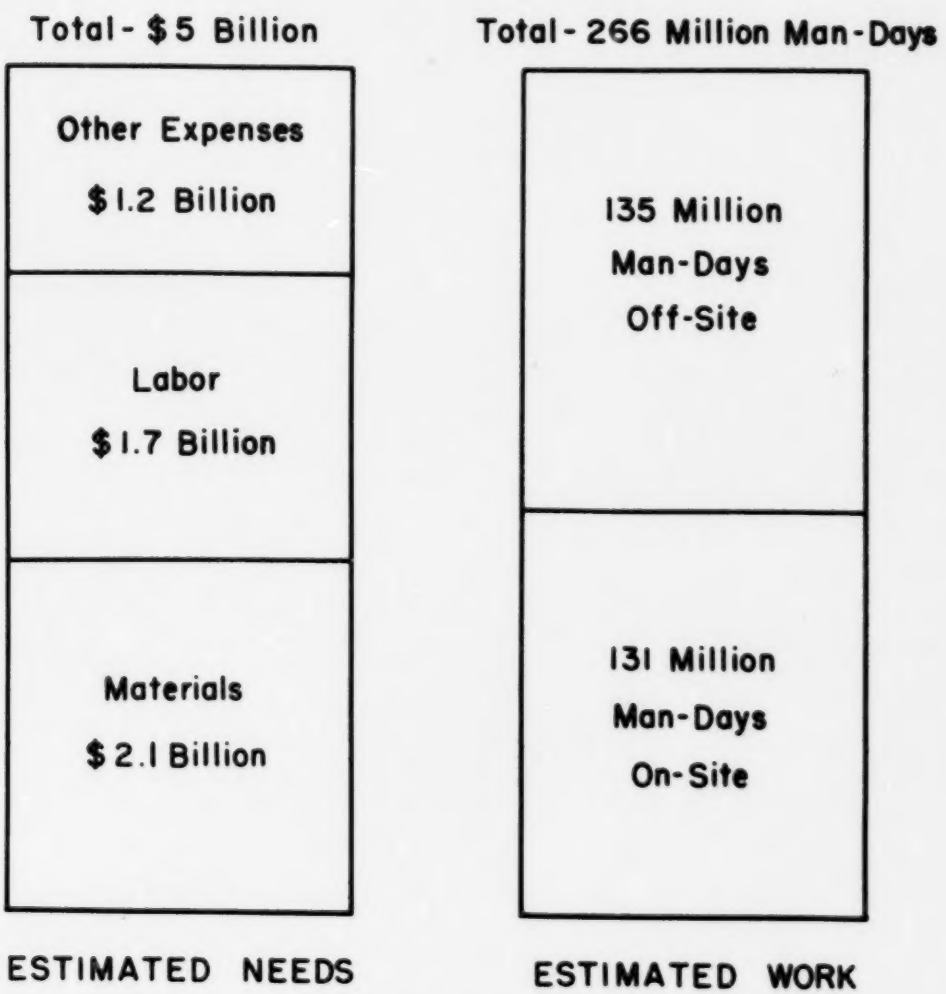
THE KEY : Aid to local government to solve financing difficulty



Plans for over one billion dollars worth of construction READY TO GO

CONSTRUCTION OF WASTE TREATMENT WORKS

Sewerage and Sewage Treatment Plant Construction—
A Substantial Portion of any Public Works Program.



RESEARCH TO RECLAIM WASTE PRODUCTS

CAN PAY INDUSTRY DIVIDENDS

Examples

Plant	Waste	Improvement	Benefits Derived
Steel Mill in Pennsylvania	Flue Dust	Recovery System Installed	$580,000 Profit the first year AND A CLEANER STREAM
Small Textile Plant in North Carolina	Caustic Waste	Reuse of Waste	$10,000 Saved each year AND A CLEANER STREAM
Paper Pulp Mill in Maine	Ground wood, slivers, and chips	Recovery System Installed	$60,000 Saved each year AND A CLEANER STREAM
Paper Mill in Illinois	Fiber in Waste	Process Change and Fiber Recovery	$50,000 Profit each year AND A CLEANER STREAM
Distillery in Illinois	Spent Grain	Recovery System Installed	$1,000,000 Profit each year AND A CLEANER STREAM

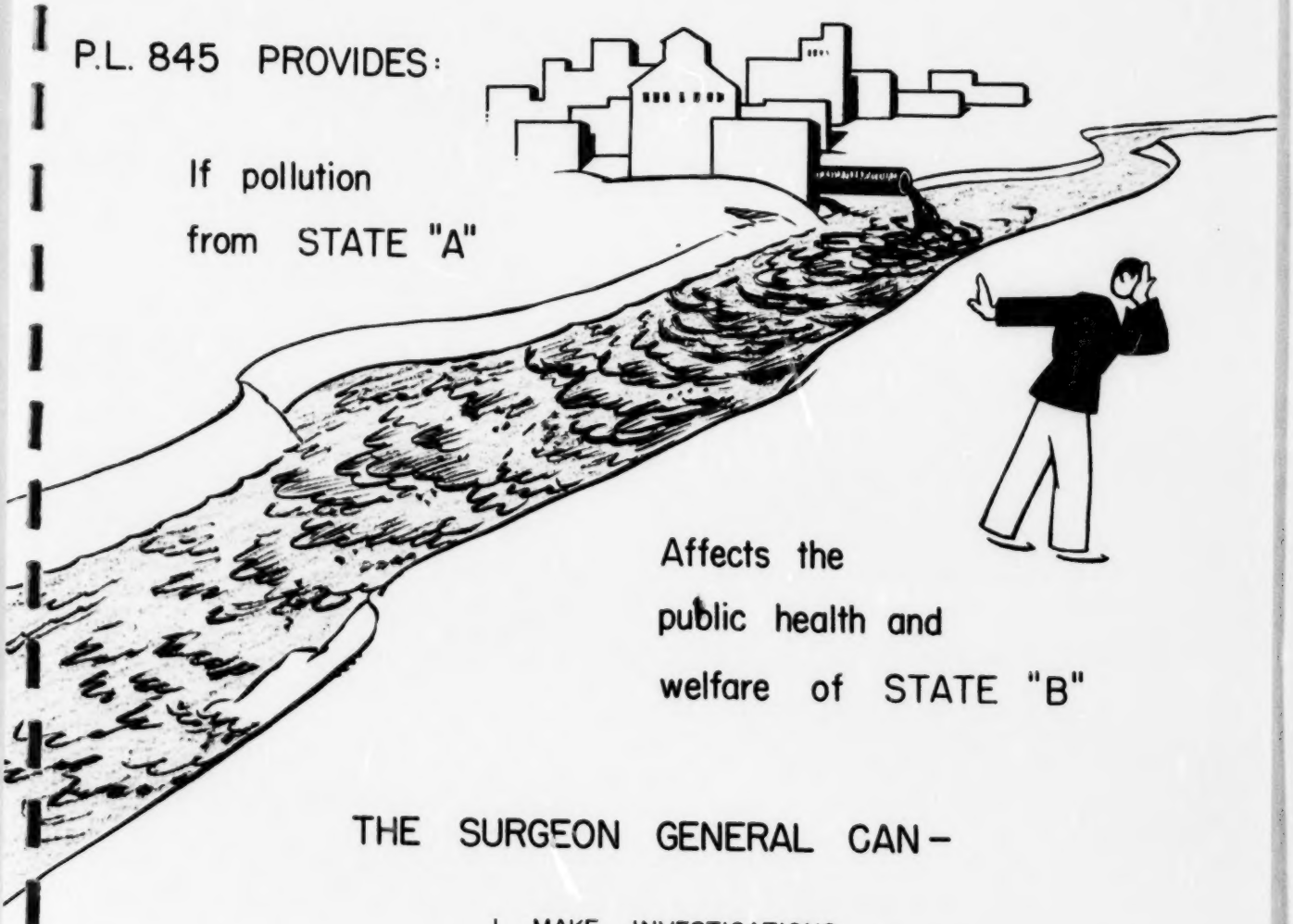
Provisional Allotments to State Water Pollution Agencies
from Section 8a P.L. 845 Grants
Fiscal Year 1950

State	Provisional Allotment	State	Provisional Allotment
Total	$850,000		
Alabama	20,010	New Mexico	10,372
Arizona	10,388	New York	35,326
Arkansas	17,396	North Carolina	23,178
California	27,370	North Dakota	9,842
Colorado	11,385	Ohio	25,780
Connecticut	12,296	Oklahoma	16,723
Delaware	9,079	Oregon	12,208
Florida	15,198	Pennsylvania	34,227
Georgia	20,386	Rhode Island	10,127
Idaho	9,969	South Carolina	16,978
Illinois	26,078	South Dakota	10,069
Indiana	18,321	Tennessee	19,737
Iowa	15,999	Texas	30,197
Kansas	13,697	Utah	10,239
Kentucky	19,698	Vermont	9,559
Louisiana	17,805	Virginia	17,774
Maine	10,941	Washington	13,473
Maryland	13,216	West Virginia	15,039
Massachusetts	18,780	Wisconsin	16,808
Michigan	22,310	Wyoming	9,180
Minnesota	16,982		
Mississippi	19,637	Dist. of Columbia	10,304
Missouri	19,559	Alaska	9,212
Montana	9,619	Hawaii	9,978
Nebraska	12,021	Puerto Rico	19,919
Nevada	8,758	Virgin Islands	8,645
New Hampshire	10,123		
New Jersey	18,085		

ENFORCING THE LAW

P.L. 845 PROVIDES:

If pollution
from STATE "A"



Affects the
public health and
welfare of STATE "B"

THE SURGEON GENERAL CAN –

1. MAKE INVESTIGATIONS
2. HOLD HEARINGS
3. INSTITUTE ACTION IN FEDERAL COURTS
   (With approval of State Water Pollution Control Agency)